Apple® II

Apple 5.25 Drive Owner's Guide

Apple II, Apple II Plus, Apple IIe, Apple IIc, Apple IIGS

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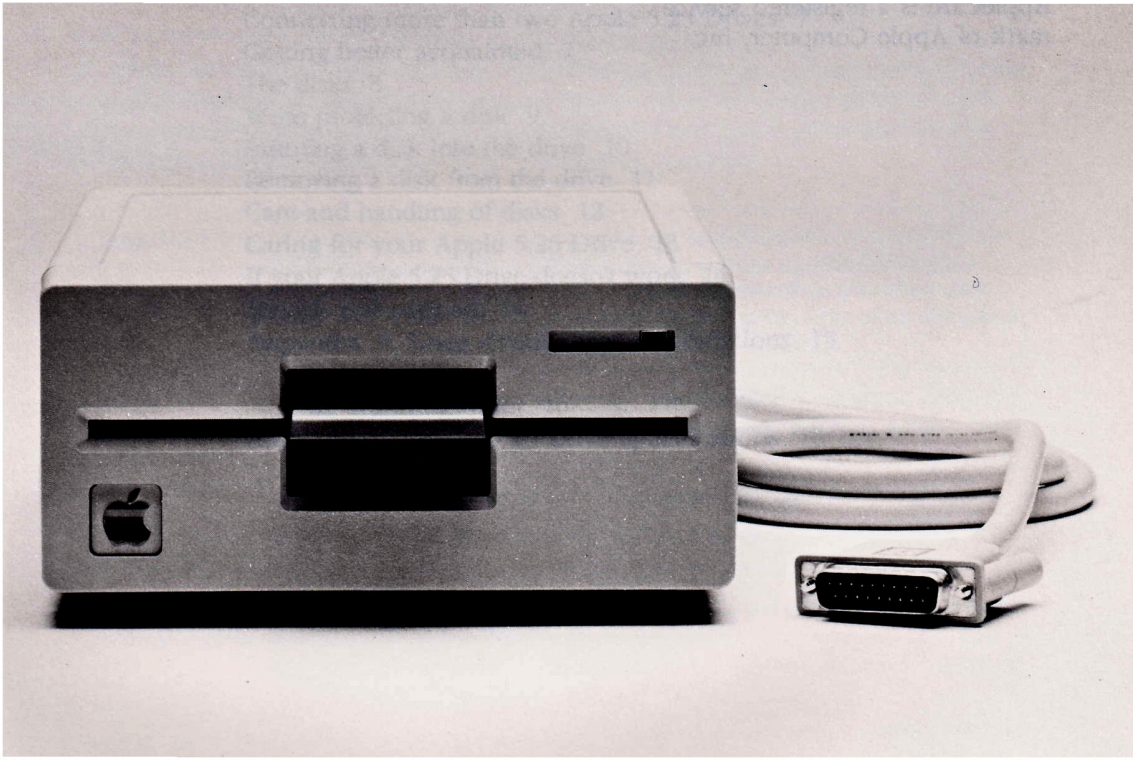
WARNING

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. See instructions if interference to radio or television reception is suspected.

Apple® II Apple 5.25 Drive Owner's Guide



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Radio and television interference

The equipment described in this manual generates and uses radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple's instructions—it may cause interference with radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J, Part 15, of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation, especially if a "rabbit-ear" television antenna is used. (A rabbit-ear antenna is the telescoping-rod type usually found on television receivers.)

You can determine whether your computer is causing interference by turning it off. If the interference stops, it was probably caused by the computer or its peripheral devices. To further isolate the problem, disconnect the peripheral devices and their input/output (I/O) cables one at a time. If the interference stops, it was caused by either the peripheral device or the I/O cable. These devices usually require shielded I/O cables. For Apple peripheral devices, you can obtain the proper **shielded cable** from your authorized Apple dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

A **shielded cable** uses a metallic wrap around the wires to reduce the potential effects of radio-frequency interference.

Important This product was FCC-certified under test conditions that included use of shielded cables and connectors between system components. It is important that you use shielded cables and connectors to reduce the possibility of causing interference to radio, television, and other electronic devices.

If your computer does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit than the television or radio. (That is, make certain the computer and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
- Consider installing a rooftop television antenna with a coaxial cable lead-in between the antenna and television.

If necessary, consult your authorized Apple dealer or an experienced radio/television technician for additional suggestions.

Apple® II

Apple 5.25 Drive Owner's Guide

The Apple® 5.25 Drive is a floppy-disk drive that uses removable, single-sided 5.25-inch disks to store and retrieve data. You can use your Apple 5.25 Drive with any Apple II in the Apple II family of computers. This guide explains all the features of the Apple 5.25 Drive. It also gives you step-by-step directions for connecting it to your computer, and instructs you in the use, care, and handling of your Apple 5.25 Drive and its storage media. You'll also find some tips on what to do if you have a problem using your Apple 5.25 Drive with your Apple II system.

Important Before reading this guide or attempting to use your Apple 5.25 Drive, you should read the manuals that came with your computer.

Your Apple 5.25 Drive comes in a lightweight, slim-line case. (See Figure 1.) It can be connected to an Apple II either directly through a disk drive port or through a **controller card** installed in a peripheral slot. If you plan to connect your Apple 5.25 Drive to your Apple II through a peripheral slot, you'll also need an Apple 5.25 Drive controller card. (See Figure 2.) The Apple 5.25 Drive controller card supports a maximum of two Apple 5.25 Drives. If you plan to use more than two Apple 5.25 Drives, you'll need to install a second Apple 5.25 Drive controller card.

A **controller card** is a printed circuit board that you install in a peripheral slot in your computer to communicate with a disk drive. It is sometimes called a *peripheral card*, an *interface card*, or just a *card*.

Figure 1
The Apple 5.25 Drive

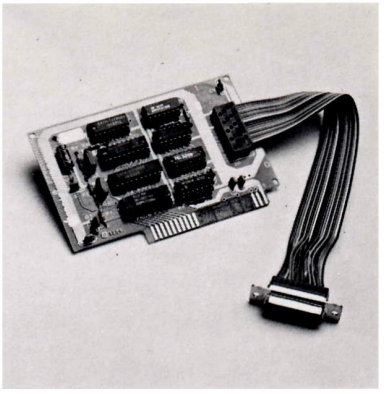


Figure 2
The Apple 5.25 Drive controller card

Connecting the Apple 5.25 Drive

Your Apple 5.25 Drive works with any model of Apple II, but how you connect the drive depends on whether you're connecting it to a disk drive port or to a controller card in a peripheral slot. If you're connecting your Apple 5.25 Drive to a port, read the next section, "Connecting the Drive to a Disk Drive Port." If you're using a controller card in a slot, skip the next section and read "Connecting the Drive to a Controller Card."

Warning To avoid damaging the electrical circuits in your computer or the drive, always turn *off* the power switch on your computer before you connect anything to it or disconnect anything from it. But leave the computer's power cord plugged in. The plug serves as a grounding device, even when the computer is turned off.

Connecting the drive to a disk drive port

If you are connecting your Apple 5.25 Drive to an Apple II through a disk drive port, follow these steps:

1. Turn *off* the power switch on the back of your computer, but leave the computer plugged in. The plug serves as a grounding device, even when the computer is turned off.

2. Touch one of the metal connectors on the back of the Apple II to discharge any static electricity that may be on your clothes or body.

Warning If you don't discharge static electricity, you could permanently damage the drive.

3. Plug the cable from your Apple 5.25 Drive into the disk drive port on the back panel of your computer and tighten the thumb screws. (See Figure 3.)

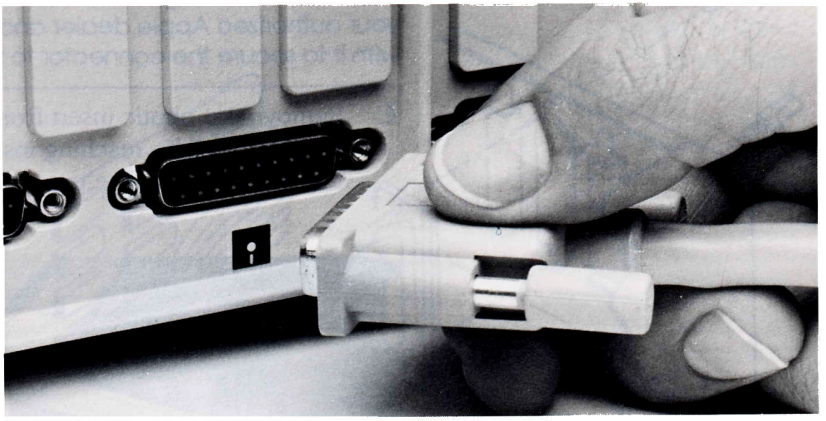


Figure 3
Plugging the Apple 5.25 Drive into a disk drive port

4. Attach a drive identification label to the recess on the front of your Apple 5.25 Drive. (The recess is next to the "in use" light.)

Connecting the drive to a controller card

If you are connecting your Apple 5.25 Drive to an Apple II through an Apple 5.25 Drive controller card, you'll need the items shown in Figure 4.

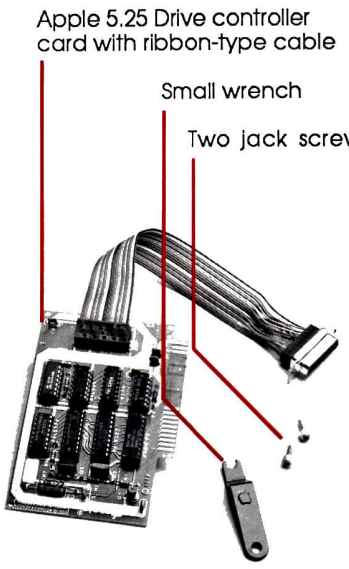


Figure 4
Things you'll need

Follow these steps to connect your Apple 5.25 Drive:

1. Turn *off* the power switch on the back of your computer, but leave the computer plugged in. The plug serves as a grounding device, even when the computer is turned off.
2. Carefully remove the cover from the computer and set it aside.

3. Touch the power supply case inside the computer to discharge any static electricity that may be on your clothes or body. (The power supply case is the large metal box on the left as you face the computer.)

Warning If you don't discharge static electricity, you could permanently damage the drive.

II, II Plus If your computer is an original Apple II or an Apple II Plus, disregard steps 4 through 6. Instead, you'll need to get a special two-part connector retaining clamp (service part number 655-8112) from your authorized Apple dealer and use the instructions that come with it to secure the connector to the back panel of the computer.

4. Remove the plastic insert from opening 2 on the back panel of your Apple II by reaching inside and pushing down and out on the plastic tab on the top of the insert. (See Figure 5.)

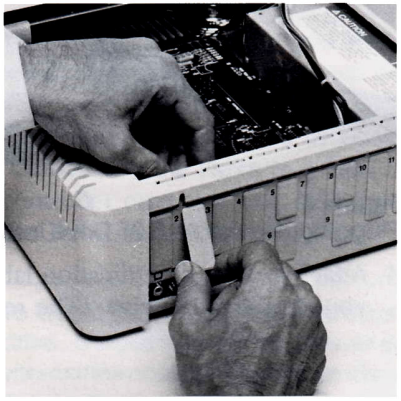


Figure 5
Removing the plastic insert from the back panel

Important In the following steps, you will handle the Apple 5.25 Drive controller card. Handle it with care. Grasp it by the corners or edges, and try not to touch the components. Don't grasp the card by the gold "fingers" on its bottom edge—they are the medium through which the computer communicates with the card, and their efficiency decreases if they are dirty or scratched.

5. Arrange the controller card, its ribbon-type cable, and two jack screws as shown in Figure 6.

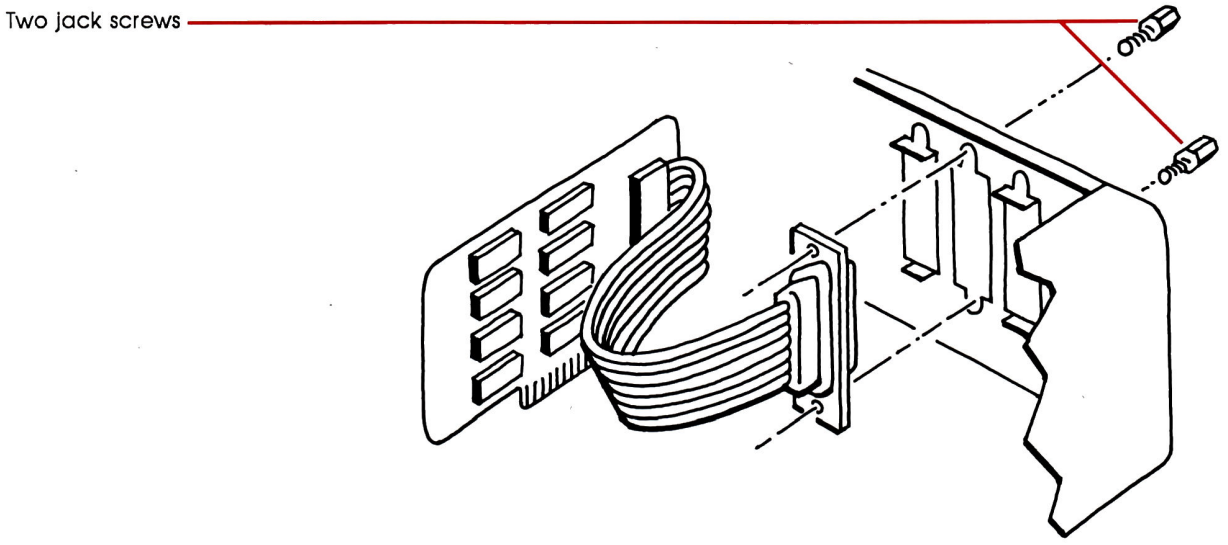


Figure 6
Arranging the controller card and hardware for installation

6. Hold the cable's D-shaped connector against the opening. Then reach behind the computer and feed the two jack screws through the holes above and below the opening and into the threaded holes on the connector. (See Figure 6.) Use the small wrench to tighten the screws.
7. Locate the row of slots across the rear of your computer's main circuit board. Each slot is identified by a number on the circuit board.
8. Hold your controller card over slot 6, the second slot from the right, so that the side of the card with the components is facing away from the computer's power supply. (See Figure 7.)

9. Gently but firmly push the gold "fingers" on the card's edge connector into the slot, rear edge first. Then push the front edge down and gently rock the card back and forth until it is level and firmly seated.
10. Put the computer's cover back into position and press down on the rear corner fasteners until they pop into place.
11. Plug the cable from your Apple 5.25 Drive into the D-shaped connector that you just installed on the back panel of your computer and tighten the thumb screws. (See Figure 8.)
12. Attach a drive identification label to the recess on the front of your Apple 5.25 Drive. (The recess is next to the "in use" light.)

Figure 7
Installing the controller card

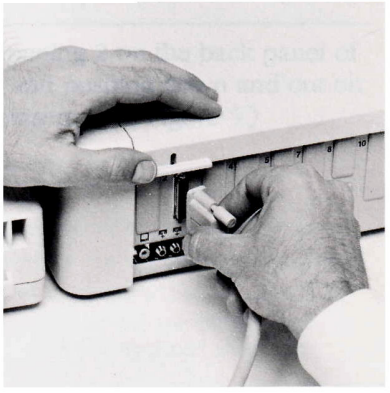


Figure 8
Plugging in the Apple 5.25 Drive

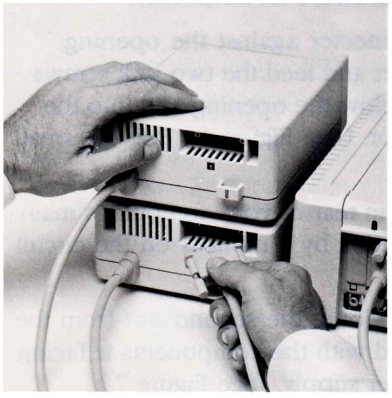


Figure 9
Attaching a second Apple 5.25 Drive

Attaching a second Apple 5.25 Drive

If you want to connect a second Apple 5.25 Drive, you attach it to the back of your first Apple 5.25 Drive. (If you connected your first Apple 5.25 Drive to a controller card, both drives will share the controller card that you installed in slot 6.)

Follow these steps to connect your second Apple 5.25 Drive:

1. Plug the cable from your second Apple 5.25 Drive into the connector on the back of the first Apple 5.25 Drive and tighten the thumb screws. (See Figure 9.)
2. Attach a drive identification label to the recess on the front of your second Apple 5.25 Drive. (The recess is next to the "in use" light.)

Connecting more than two Apple 5.25 Drives

If your Apple II system uses only ports to communicate with peripheral devices, you are limited to using two Apple 5.25 Drives connected daisy-chain fashion. You can connect more than two Apple 5.25 Drives to your Apple II system if your computer has slots for peripheral cards. If you plan to use a third and fourth drive, you'll need to install a second controller card in a vacant slot. (Each controller card controls two drives.) If possible, install the second controller card in slot 5.

To install a second controller card, follow the instructions in the section "Connecting the Drive to a Controller Card," but this time remove the plastic insert from opening 5 on the back panel of your Apple II and install the card in slot 5.

Warning If you are using a combination of Apple 5.25 and 3.5 Drives, make sure you're using the correct controller card for each type of drive. You cannot plug an Apple 5.25 Drive into an Apple 3.5 Drive controller card, or an Apple 3.5 Drive into an Apple 5.25 Drive controller card. Plugging your drive into the wrong controller card can permanently damage the drive. For more information about using a combination of 5.25-inch and 3.5-inch disk drives, see Appendix A, "Daisy-Chain Drive Combinations."

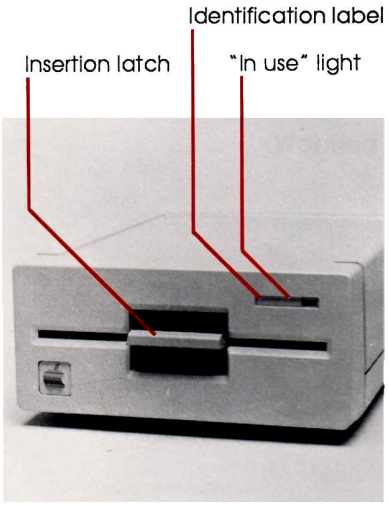


Figure 10
The front of the Apple 5.25 Drive

Getting better acquainted

Now you're ready to use your Apple 5.25 Drive. But before you do, you should read the rest of this guide to learn a little more about your drive and its disks.

The Apple 5.25 Drive has no operating controls, but it does have a red "in use" indicator light that comes on whenever the drive is running. (See Figure 10.)

You can use your Apple 5.25 Drive with any of the operating systems that are available for the Apple II family of computers. For a complete explanation of the operating system you are using, read your owner's manual or the manual that came with your software.

The disks

Your Apple 5.25 Drive uses removable, single-sided 5.25-inch disks. Each disk can store approximately 143,000 bytes of formatted data. The circular disk is enclosed in a square jacket. (See Figure 11.) This jacket protects the disk and contains a woven fabric liner that wipes the disk as it spins in the jacket. A lubricant on the surface of the disk keeps the disk spinning freely inside the jacket.

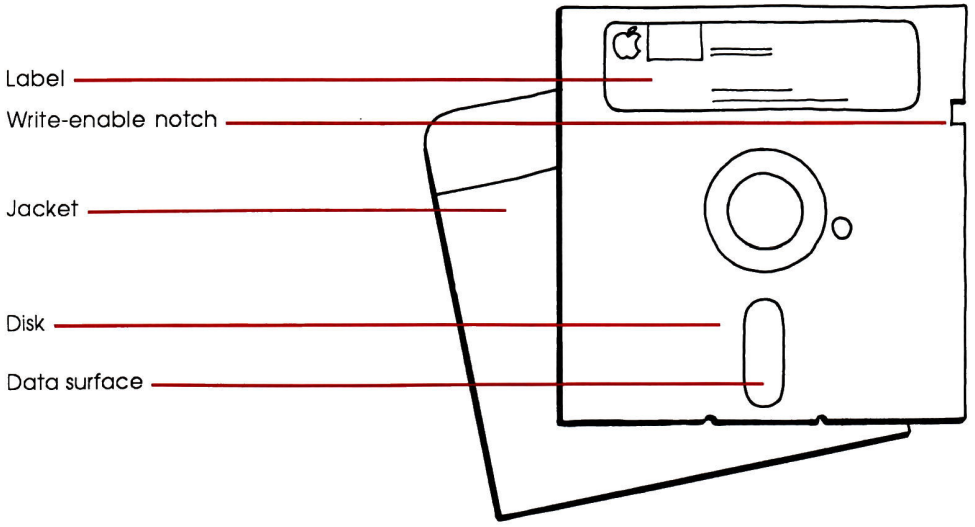


Figure 11
A 5.25-inch disk

Write protecting a disk

Most 5.25-inch disks have a rectangular write-enable notch. (See Figure 11.) This notch allows information to be stored on a disk during a write operation. When you don't want the contents of your disks changed by mistake, you can cover the write-enable notch with one of the write-protect tabs that came with your disks. (See Figure 12.)

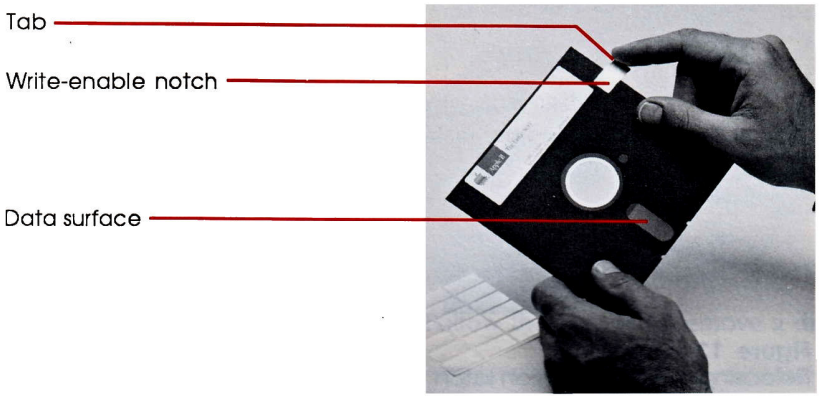


Figure 12
Write protecting a disk

With the notch covered, the computer cannot write any information onto the disk surface or change information that is already there. If, at a later time, you want to store information on the disk, you'll need to remove the write-protect tab first.

Warning A write-protect tab will not protect a disk from accidental loss of data due to careless handling.

Before inserting a write-protected disk into the disk drive, make sure the tab is securely attached to the disk. Tabs that are not securely attached can come off inside the drive.

Inserting a disk into the drive

Follow these steps to insert a disk into your Apple 5.25 Drive:

1. If the disk insertion latch is closed, release it by pushing it in as shown in Figure 13.

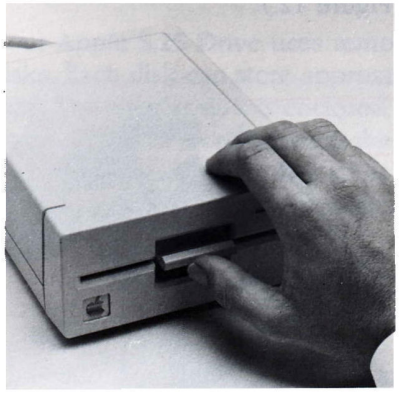


Figure 13
Releasing the disk insertion latch

2. Grasp the disk jacket between your thumb and forefinger, with your thumb on the label.

Warning Be careful not to touch the data surface of the disk. This is the area of the disk exposed by the oval cutout in the jacket.

3. Gently insert the disk into the disk drive, oval cutout end first, label side up. (See Figure 14.) Be careful not to bend or force the disk. If you feel any unusual resistance, pull the disk back out slowly and try again.
4. When the disk is all the way inside, push down on the latch until it clicks shut. (See Figure 15).

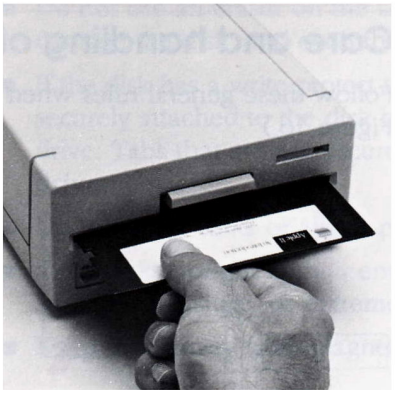


Figure 14
Inserting a disk into the drive

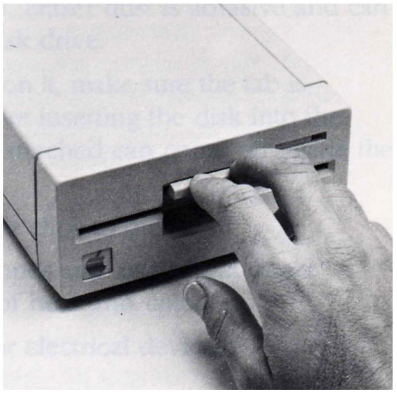


Figure 15
Closing the disk insertion latch

Removing a disk from the drive

Follow these steps to remove a disk from your Apple 5.25 Drive:

Warning Before you remove the disk, make sure the "in use" light is *off.* Never remove a disk while this light is on. Doing so may destroy some of the information on the disk. (If the light stays on longer than 45 seconds, you can return control to the computer by pressing Control-Reset.)

1. Push in on the insertion latch to release it and partially eject the disk.
2. Gently remove the disk from the slot and put it in a disk envelope.

❖ *By the way:* If you have a disk in your drive but are not planning to use the drive, leave the insertion latch in the released position.

Care and handling of disks

Follow these general rules when handling 5.25-inch disks. (See Figure 16.)

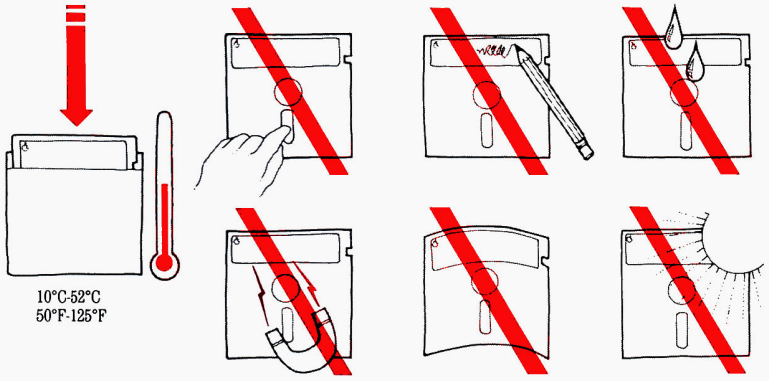


Figure 16
Care and handling of disks

- Never let anything touch the data surface of the disk. A scratch, or even a fingerprint, can cause errors.
- Do not place disks on dirty or greasy surfaces.
- Don't let disks collect dust.
- Handle the disk by the plastic jacket only.
- Use a felt-tip pen to write on a label already attached to a disk. Don't use a pencil or ball-point pen—they may dent the recording surface. It's better to write on the label before you attach it to the disk.

- Do not use an eraser on the label. Eraser dust is abrasive and can damage the disk, and even the disk drive.
- If the disk has a write-protect tab on it, make sure the tab is securely attached to the disk before inserting the disk into the drive. Tabs that are not securely attached can come off inside the drive.
- Do not bend disks or attach paper clips to them.
- Store disks upright in their envelopes and away from direct sunlight, moisture, or extremes of heat and cold.
- Keep disks away from magnets or electrical devices.

Caring for your Apple 5.25 Drive

Your disk drive is a precision electromechanical, magnetic storage device. It has motors and moving parts; in some ways, it is more delicate than the computer. Your Apple 5.25 Drive was completely aligned and tested before it left the factory so that it would give you trouble-free operation. However, you can cause serious damage to the drive if you accidentally drop it, jar it sharply, or plug it in or unplug it when the computer's power is on.

If your Apple 5.25 Drive doesn't work

If your Apple 5.25 Drive doesn't work, check the following:

- Have you plugged the cable from the Apple 5.25 Drive into the port or controller card?
- If you're using a controller card, is the card in the appropriate slot in your computer?
- Have you plugged your computer's power cord into an outlet or power strip?
- Have you turned on your computer?
- Have you correctly inserted a 5.25-inch disk into your Apple 5.25 Drive?
- Is your drive too close to the monitor? Non-Apple monitors may cause the Apple 5.25 Drive to make read/write errors because of the electromagnetic interference (EMI) field emitted by the monitor. Apple monitors are shielded to contain the EMI.

If your Apple 5.25 Drive still doesn't work, contact your authorized Apple dealer.

Warning Don't remove your Apple 5.25 Drive's outer case—removing the case will void your warranty.

Service and support

To help you get the best performance from your system, Apple Computer, Inc. has established a worldwide network of full-support authorized Apple dealers. If you need answers to technical questions or information about product updates, your authorized Apple dealer can help you. Apple's Technical Support organization backs each dealer and international technical support group via AppleLink, a state-of-the-art on-line electronic information service, to ensure prompt, reliable assistance.

Your dealer has the latest information on new hardware and software products as well as product updates. If you wish to upgrade your system, your dealer can help you select compatible components.

If your product requires service, your local authorized Apple dealer is trained and ready to support you. Apple provides factory-quality parts and the latest available diagnostic equipment to the more than three thousand authorized Apple service centers throughout the world. Apple guarantees parts and warranty labor. (Regulations in each country determine the length of warranty. Some restrictions may apply, depending on the country of original purchase.)

If for some reason you cannot return to the authorized dealer from whom you purchased your system, go to the nearest service location. For the location nearest you, in the United States, call (800) 538-9696; in Canada, call (800) 268-7796 or (800) 268-7637. For locations in other countries, either call the Apple headquarters in your country or write to

Apple Computer, Inc.
Attn: Customer Relations
20525 Mariani Avenue
Cupertino, CA 95014
USA

Apple also offers service options designed to meet your needs. They range from carry-in contracts like the Apple*Care*® Service Agreement (U.S., Canada, and Australia only), which extends full warranty coverage up to three years, to self-service plans designed to allow large installations to repair their own equipment. Whether you use your computer at home, in the office, or at school, Apple has a low-cost service plan for you. For details, please visit your authorized Apple dealer.

Appendix A: Daisy-chain drive combinations

The Apple IIGS lets you use a combination of 5.25 and 3.5 drives, and the drives can be daisy-chained to the computer in a variety of ways. This appendix provides some possible drive configurations and explains the order in which your Apple IIGS will scan the drives when searching for a startup disk.

Important It is possible to daisy-chain more than four disk drives on your Apple IIGS. Remember, however, that the computer supplies all the power for your drives. If you try to daisy-chain more than four drives, there may be too much drain on the power supply, and the long cable length may pick up electrical signal noise that could affect how your drives work.

Chaining

Figure 17 shows a series of possible drive configurations. Notice that in a chain of up to four drives, you can connect

- 1 or 2 Apple 3.5 Drives
- 1 or 2 UniDisk™ 3.5 Drives
- 1 or 2 Apple 5.25 Drives (including the UniDisk drive, the DuoDisk™ Drive, and the IIc External Drive)

❖ *Note:* The Apple 3.5 Drives should come first in any chain, and all 3.5-inch drives should come before any 5.25-inch drives in the chain.

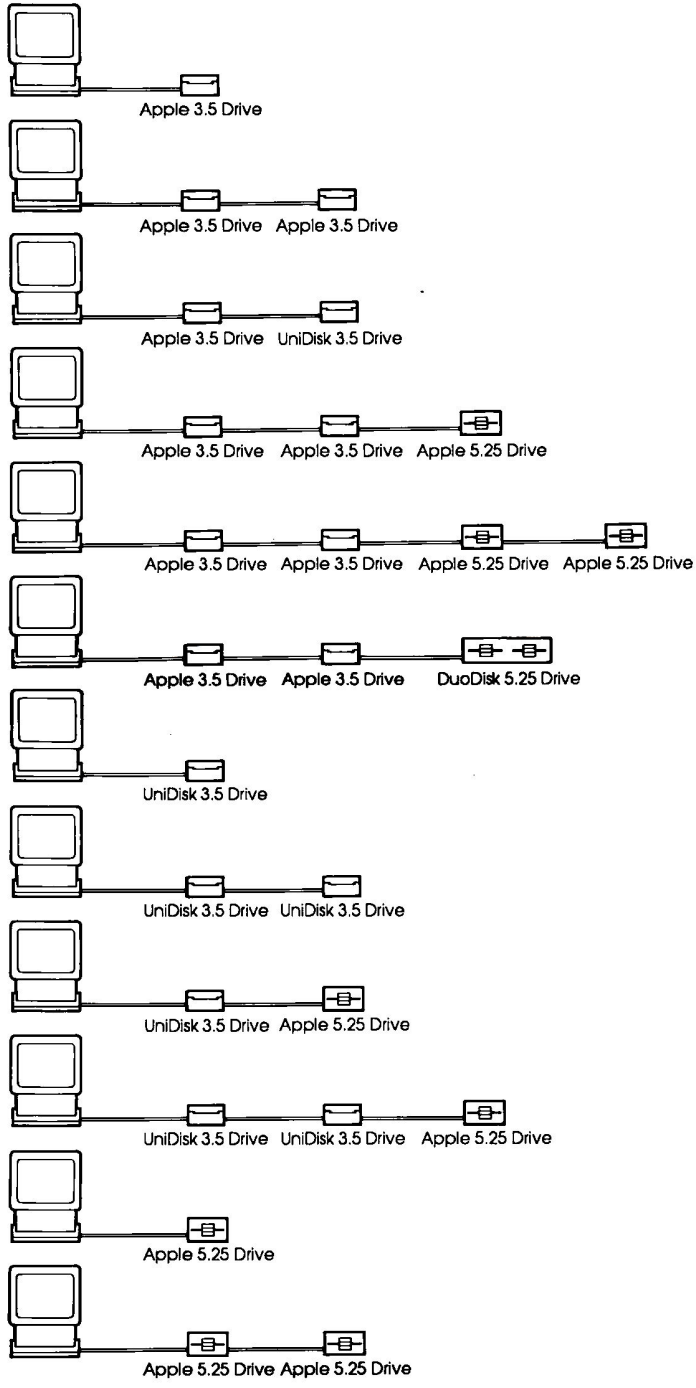
The Apple IIc External Drive or the DuoDisk must be the last in a chain because neither has a daisy-chain port.

To daisy-chain a DuoDisk with a serial number below 433754, you must insert the DuoDisk controller card in slot 6.

The Disk II® Drive cannot be daisy-chained because it doesn't have a DB-19 connector.

The scanning order

The Apple IIGS follows a particular scanning order as it searches for a startup disk in the drives connected to it. You can override this scanning order by using the Control Panel. If you do not override the scanning order, the Apple IIGS always looks first in slot 6 for a disk in a 5.25-inch drive, and then in slot 5 for a disk in a 3.5-inch drive.


Apple 3.5 Drive
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Apple 5.25 Drive
Apple 5.25 Drive Apple 5.25 Drive

Figure 17
Possible drive configurations

The Apple IIGS tries to start up from a disk in the 5.25-inch drive first, even if it is not the first drive in the chain. If the Apple IIGS doesn't find a disk in the 5.25-inch drive, it tries to start up from the first Apple 3.5 Drive connected to the port that corresponds to slot 5, drive 1.

If you chain an Apple 3.5 Drive and a UniDisk 3.5 Drive, the Apple IIGS tries to start up from the disk in the Apple 3.5 Drive. If the Apple IIGS can't find an Apple 3.5 Drive, it will start up from a UniDisk 3.5 Drive. It will not try to start up from a UniDisk 3.5.

Appendix B: Apple 5.25 Drive specifications

The Apple 5.25 Drive is a self-contained, highly reliable data storage system for Apple II computers. It uses a single-sided, low-profile, 5.25-inch floppy-disk drive. The drive is equipped with its own electronics that process the data signal and control the disk speed, head positioning, and other drive functions. When removed from the shipping container, the drive is ready to be plugged into a disk drive port or an Apple 5.25 Drive controller card and used. It requires no special preparation.

Formatted data capacity	143 kilobytes per disk
Data surfaces	1
Data transfer rate	250 kilobits per second
Disk rotational speed	299 rpm
Tracks per surface	35
Tracks per inch (TPI)	48
Number of read/write heads	1
Operating temperature	10°C to 40°C ambient 50°F to 104°F ambient
Relative humidity	20% to 80% (noncondensing)
Weight	2.17 kg (4.78 lb)
Case dimensions	162W x 72H x 207L mm

THE APPLE PUBLISHING SYSTEM

This Apple manual was written, edited, and composed on a desktop publishing system using the Apple Macintosh™ Plus and Microsoft® Word. Proof and final pages were created on the Apple LaserWriter™ Plus. POSTSCRIPT™, the LaserWriter's page-description language, was developed by Adobe Systems Incorporated.

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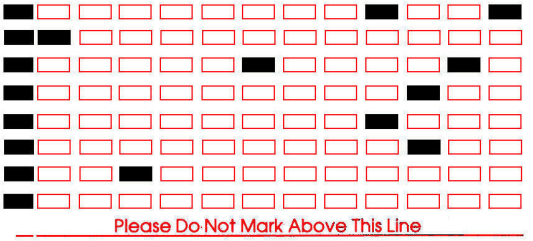
Downloaded from www.Apple2Online.com

Tell Apple About Your Apple® 5.25 Drive

- Please contact your authorized Apple dealer when you have questions about your Apple products. Dealers are trained by Apple Computer and are given the resources to handle service and support for all Apple products. If you need the name of an authorized Apple dealer in your area, call toll-free: 800-538-9696.

- Would you like to tell Apple what you think about this product? After you have had an opportunity to use this product, we would like to hear from you. You can help us to improve our products by responding to the questionnaire below and marking the appropriate boxes on the card at the right with a **#2 lead pencil**. If you have more than one response to a question, mark all the boxes that apply. Please detach the card and mail it to Apple. Include additional pages of comments if you wish.



1. How would you rate the Apple 5.25 Drive overall? (**1**=poor . . . **6**=excellent)
2. Where did you purchase your Apple 5.25 Drive? (**1**=dealer, **2**=Corporate Buy, **3**=Teacher Buy, **4**=department store, **5**=other)
3. Did you purchase your Apple 5.25 Drive and computer at the same time? (**1**=no, **2**=yes)
4. Which computer are you using with your Apple 5.25 Drive? (**1**=Apple IIGS, **2**=Apple II, **3**=Apple II Plus, **4**=Apple IIe, **5**=Apple IIc, **6**=other)
5. How many 5.25 drives do you use? (**1**=one, **2**=two, **3**=three or more)
6. In addition to your Apple 5.25 Drive, what other storage devices do you use? (**1**=3.5 drive, **2**=hard disk drive, **3**=tape cassette, **4**=other)
7. Where is your Apple 5.25 Drive used most often? (**1**=home, **2**=work, **3**=school, **4**=other)
8. What software applications on a 5.25-inch disk will you be using? (**1**=word processing, **2**=spreadsheet, **3**=data base, **4**=communication, **5**=games, **6**=education, **7**=business graphics, **8**=art, **9**=other)
9. How easy was your Apple 5.25 Drive to set up? (**1**=difficult . . . **6**=very easy)
10. Did you use the *Apple 5.25 Drive Owner's Guide* to help you set up? (**1**=no, **2**=yes)
11. How would you rate your satisfaction with the *Apple 5.25 Drive Owner's Guide?* (**1**=low . . . **6**=high)
12. How easy was the *Apple 5.25 Drive Owner's Guide* to read and understand? (**1**=difficult . . . **6**=very easy)
13. Please describe any errors or inconsistencies you may have encountered with the materials. (Page numbers would be helpful.)
14. What suggestions do you have for improving the Apple 5.25 Drive?

Thanks for your time and effort.

030-1173-A

Return Address: _____

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_____

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